优尚

YOUSHANG SEMICONDUCTOR

设计研发新型功率器件

各类小信号开关

中低压及高压大电流等场效应管

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Features

- Epitaxial Planar Die Construction
- Complementary NPN Types Available (NK-DDTC)
- Built-In Biasing Resistors, R1 only

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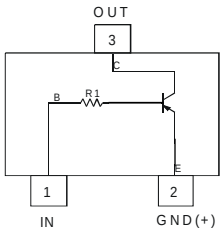
Mechanical Data

- Case: SOT523
- Case Material: Molded Plastic, “Green” Molding Compound UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.002 grams (Approximate)

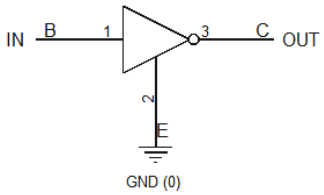
Part Number	R1 (NOM)
NK-DDTA113TE	1kΩ
NK-DDTA123TE	2.2 kΩ
NK-DDTA143TE	4.7kΩ
NK-DDTA114TE	10kΩ
NK-DDTA124TE	22kΩ
NK-DDTA144TE	47kΩ
NK-DDTA115TE	100kΩ
NK-DDTA125TE	200kΩ

SOT523

Top View



Device Schematic



Equivalent Inverter Circuit

Maximum Ratings (@ T_A = +25°C, unless otherwise specified.)

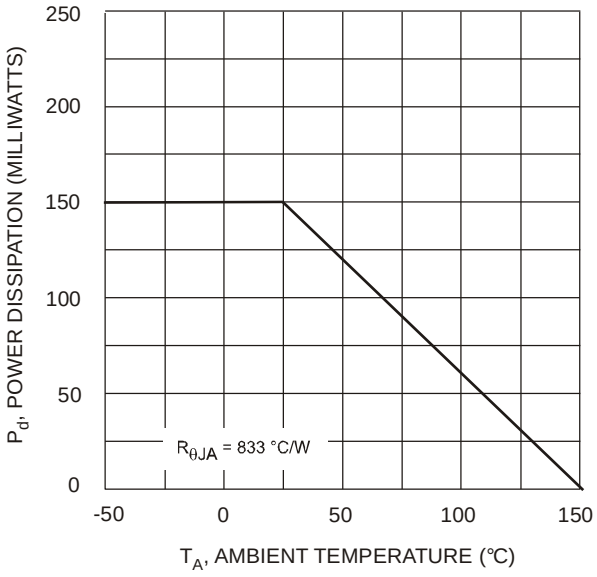
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-50	V
Collector-Emitter Voltage	V_{CEO}	-50	V
Emitter-Base Voltage	V_{EBO}	-5	V
Peak Pulse Collector Current (Single Pulse)	I_{CM}	-100	mA

Thermal Characteristics (@ T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	150	mW
Thermal Resistance, Junction to Ambient Air (Note 5)	$R_{\theta JA}$	833	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Note: 5. For a device surface mounted on 15mm x 15mm x 0.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions; device measured when operating in steady state condition.

Thermal Characteristics and Derating Information



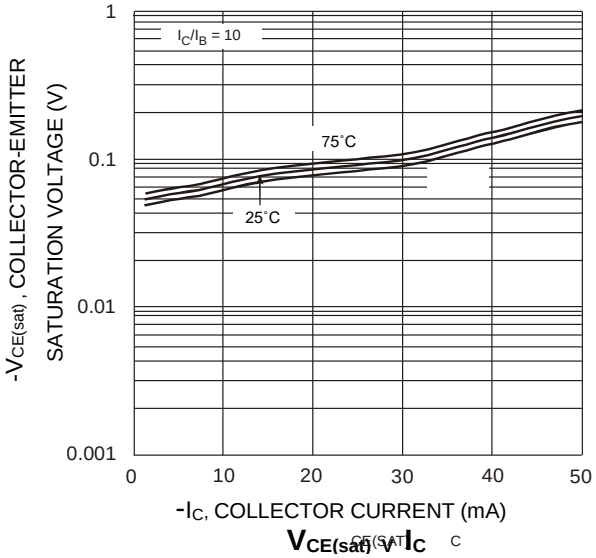
Derating Curve

Electrical Characteristics (@ T_A = +25°C, unless otherwise specified.)

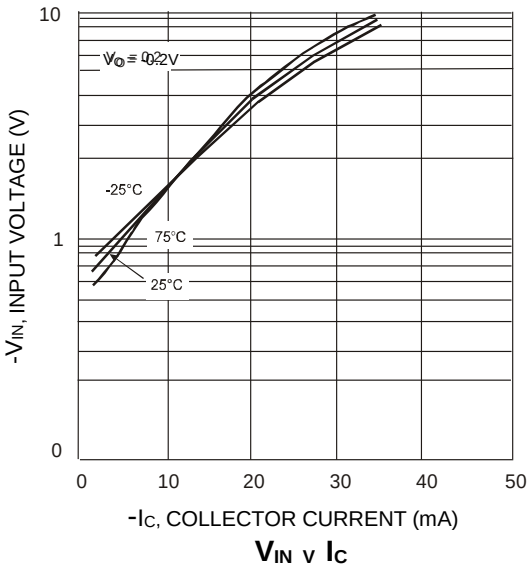
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	-50	—	—	V	I_C = -50μA
Collector-Emitter Breakdown Voltage (Note 6)	BV_{CEO}	-50	—	—	V	I_C = -1mA
Emitter-Base Breakdown Voltage	BV_{EBO}	-5	—	—	V	I_E = -50μA
Collector Cut-Off Current	I_{CBO}	—	—	-0.5	μA	V_{CB} = -50V
Emitter Cutoff Current	I_{EBO}	—	—	-0.5	μA	V_{EB} = -4V
Collector-Emitter Saturation Voltage (Note 6)	$V_{CE(sat)}$	—	—	-0.3	V	I_C/I_B = -10mA/-1mA NK-DDTA113TE I_C/I_B = -5mA/-0.5mA NK-DDTA123TE I_C/I_B = -2.5mA/-0.25mA NK-DDTA143TE I_C/I_B = -1mA/-0.1mA NK-DDTA114TE I_C/I_B = -5mA/-0.5mA NK-DDTA124TE I_C/I_B = -2.5mA/-0.25mA NK-DDTA144TE I_C/I_B = -1mA/-0.1mA NK-DDTA115TE I_C/I_B = -0.5mA/-.05mA NK-DDTA125TE
DC Current Gain (Note 6)	h_{FE}	100	250	600	—	I_C = -1mA, V_{CE} = -5V
Transition Frequency (Note 6)	f_T	—	250	—	MHz	V_{CE} = -10V, I_E = 5mA, f = 100MHz

Note: 6. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

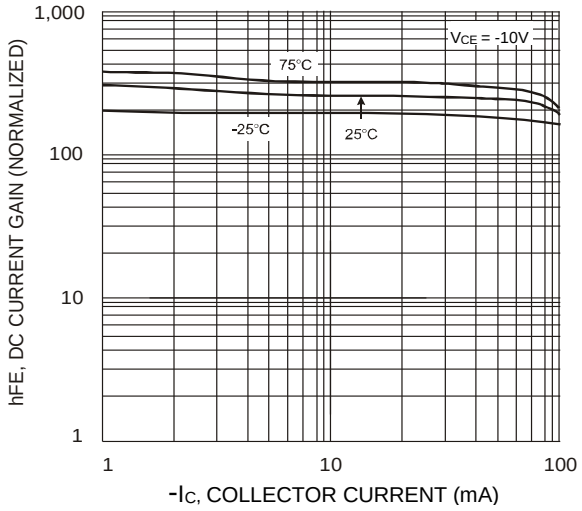
Typical Electrical Characteristics (@ T_A = +25°C unless otherwise specified.)



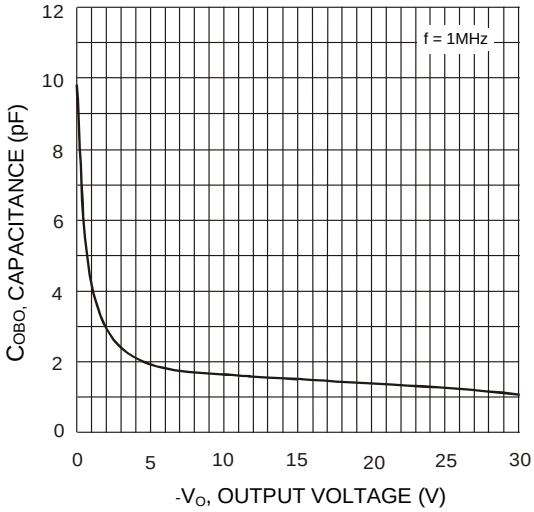
$V_{CE(sat)}$ v I_C



V_{IN} v I_C



h_{FE} v I_C



C_{OBO} v V_O

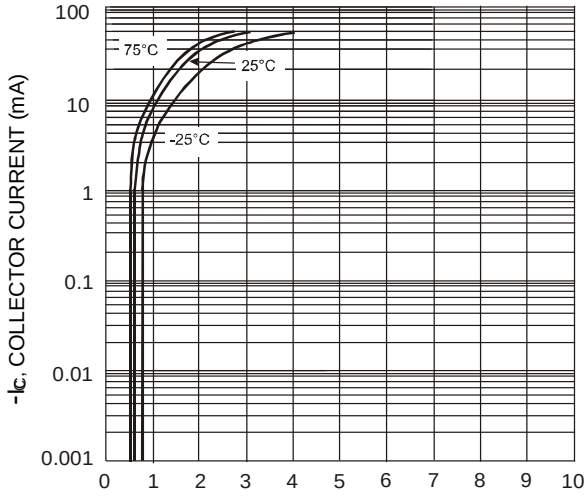
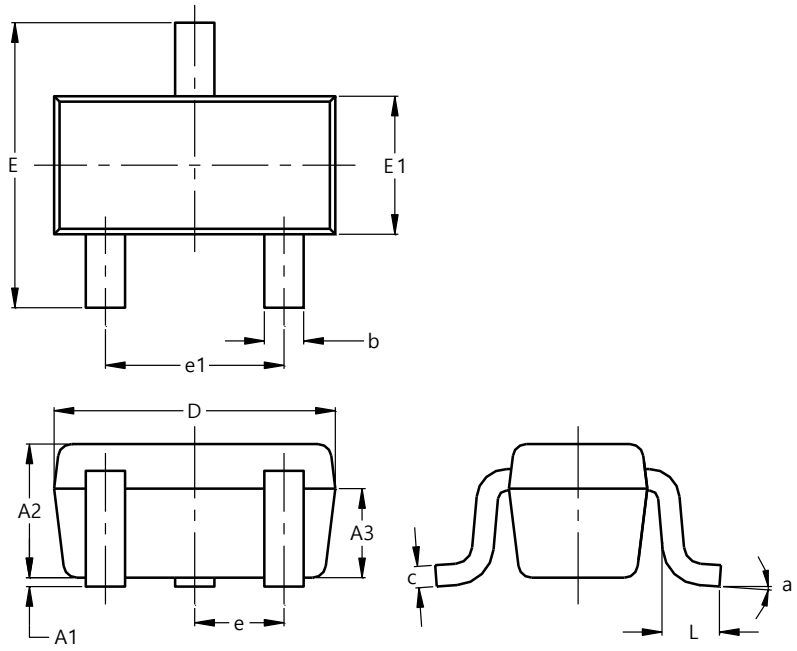


Fig. 5 Collector Current vs. Input Voltage

I_C v V_{IN}

Package Outline Dimensions

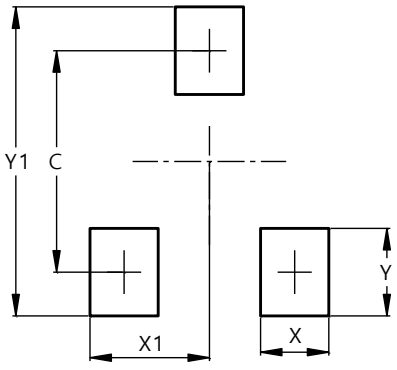
SOT523



SOT523			
Dim	**Min**	**Max**	**Typ**
A1	0.00	0.10	0.05
A2	0.60	0.80	0.75
A3	0.45	0.65	0.50
b	0.15	0.30	0.22
c	0.10	0.20	0.12
D	1.50	1.70	1.60
E	1.45	1.75	1.60
E1	0.75	0.85	0.80
e	0.50 BSC		
e1	0.90	1.10	1.00
L	0.20	0.40	0.33
a	0°	--	8°
All Dimensions in mm			

Suggested Pad Layout

SOT523



Dimensions	Value
C	1.29
X	0.40
X1	0.70
Y	0.51
Y1	1.80